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34. Поворотная декорация для невесомости, или разгадка «Джемини-4». Часть 4.

8-10 minutes

Part 1. **How the spacewalk was filmed in the pavilion, or the solution to Gemini 4.**

Part 2. **Where the glove flies, or the solution to "Gemini 4".**

Part 3. **Somersault in zero gravity, or the solution to "Gemini-4".**

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PART 4.

The next cinematic technique we need to describe has been used many times in cinematography. It does not have its own special name, but consists in the fact that the camera rotates synchronously with the scenery.

We have already mentioned the film "Space Flight" (1935), where it was necessary to show weightlessness when a rocket with travelers flies to the moon. It was necessary to make shots in which the actors seem to be floating in space against the background of the walls.

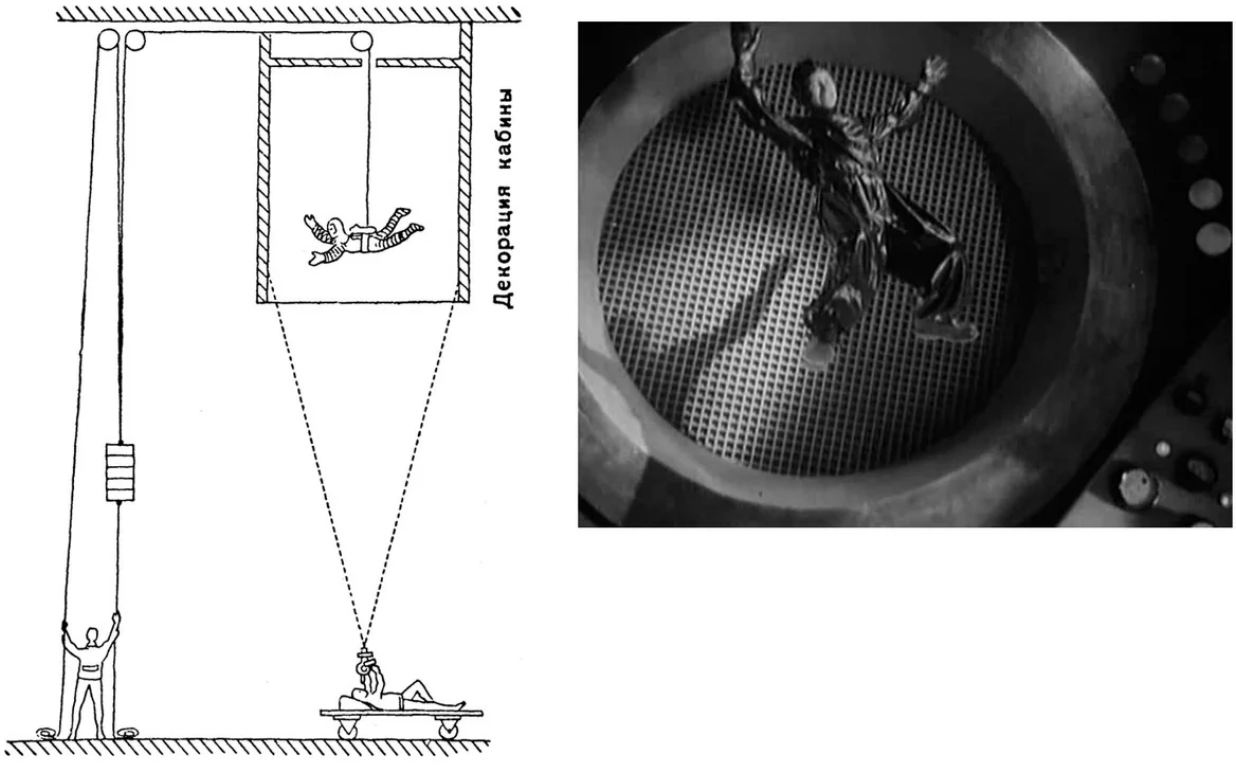

Fig. 1. Shooting weightlessness in the movie "Space Flight"

In the pavilion, a wall of the decoration of the ship's cabin was installed, rotating on a thick wooden axis, and the camera was installed in a device that allows it to be rotated around the optical axis. If we rotate the apparatus and the decoration with the same speed, then we will not see any movement on the screen.

If you hang an actor between the camera on thin black cables and start rotating the camera along with the scenery, then the actor making simple swimming movements will look like a propeller rotating around himself on the screen.

Video: Fragment of the film "Space Flight"

Such rotating sets are not uncommon, they are made not only for horror films, where zombies walk on the ceiling, but also for some clips. For example, here is how a special revolving room was used in the “Buy, buy, buy” clip of the NSync group - Fig.2.

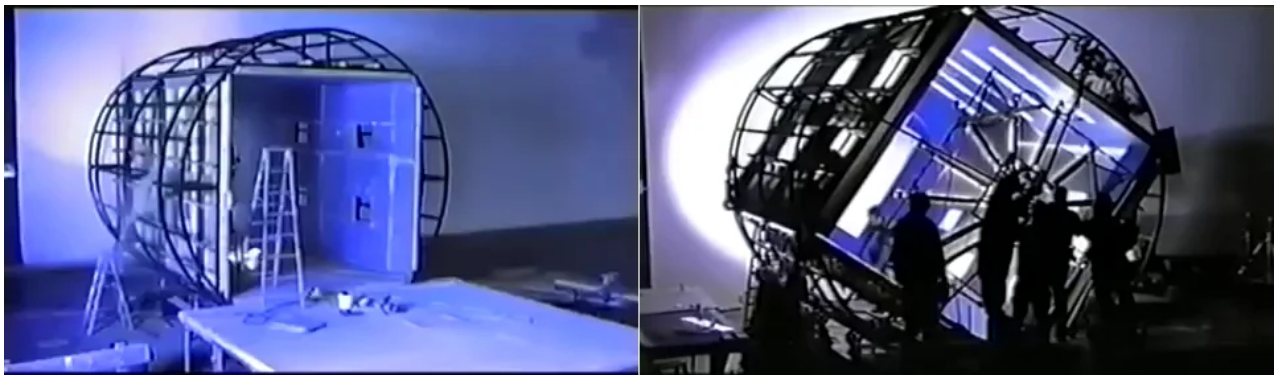

Fig. 2. Rotating room decoration.

The camera was attached to the set and rotated along with the walls. When the scenery was rotated by 90, the floor turned out to be in place of the wall, and the actors, moving, turned out to be standing on the side wall - Fig. 3, on the left.

And, of course, for the clip we tried different options for installing the camera in a rotating set.

Fig. 3. The resulting effect when the camera is installed differently.

VIDEO about the shooting of the video for the NSync group:

And, of course, speaking about the use of rotating sets in cinema, we cannot pass by the “classic” example from the movie “2001. A space odyssey ". In one of the scenes, a stewardess, grabbing trays with food for the pilots,

with the help of "special" magnetic shoes, walked along the walls of the room to the ceiling, ending up upside down at the end - Fig. 4.

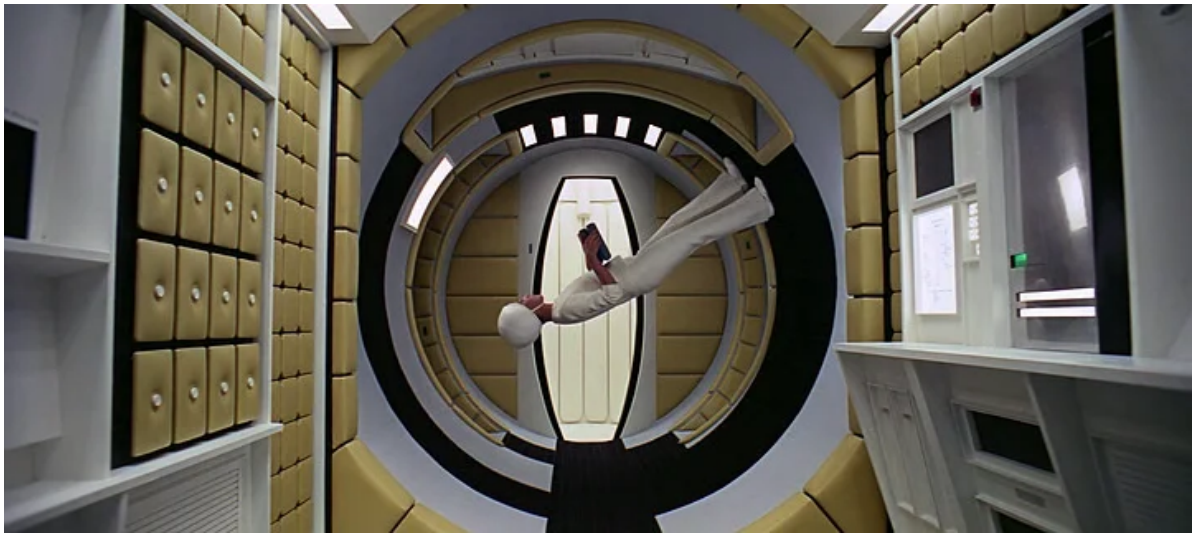

Fig. 4. A scene with a stewardess from the film “2001. A space odyssey ".

VIDEO

This is how it looks in the film (fragment):

The scene where a spaceship stewardess walks along the wall and ceiling of the room, violating the laws of gravity, was filmed as follows. The decoration was in a cylinder that could rotate. The filming camera was rigidly attached to the floor on a tripod. At the moment when the actress began to walk along the wall, the cylinder began to move.

In fact, it stood in place, and the decoration revolved around it, making a 180° turn and turning upside down (up floor, down ceiling). See how the stewardess walked in reality, and you will clearly notice at the end of her movement a sharp jolt due to the fact that the rotation of the scenery has stopped.

VIDEO: it was so in real.

The next shot - a stewardess enters the cockpit to the pilots. Shooting with an inverted camera begins - Fig. 5.

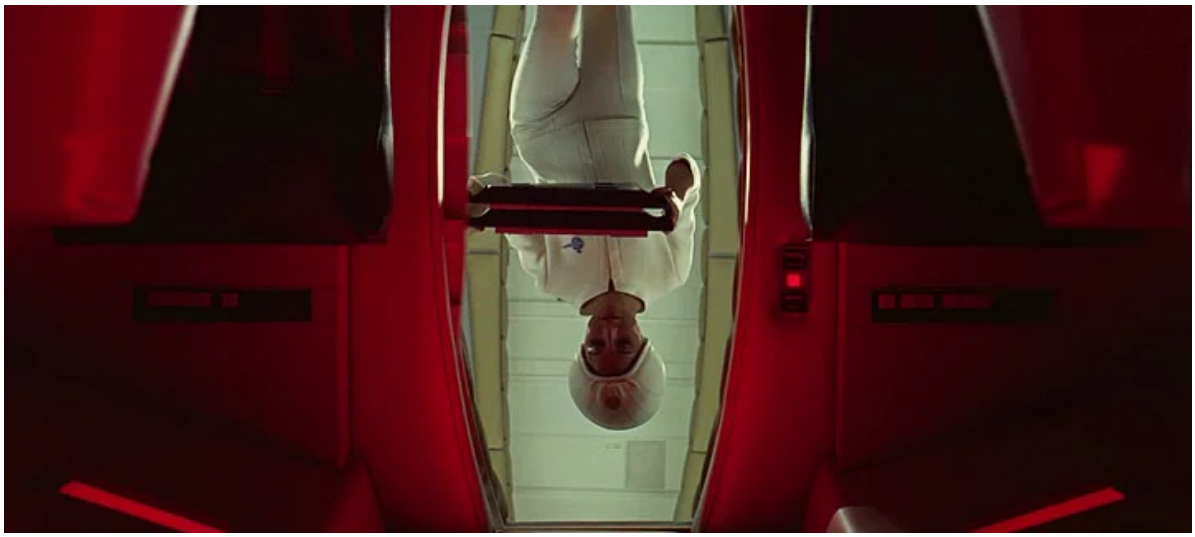

Fig. 5. Shooting with an inverted camera.

While the stewardess is walking forward, the movie camera has time to rotate 180˚. At the end of the frame, the camera takes the "normal" position - Fig. 6.

Fig. 6. The camera returns to its normal position.

A special design was invented to rotate the camera. Tripods are familiar to everyone - they allow you to make panoramas in a horizontal plane. And here is what the device looks like (it is called "rig" from the English. Rig - equipment), with which the camera can be rotated in a vertical plane - Fig. 7.

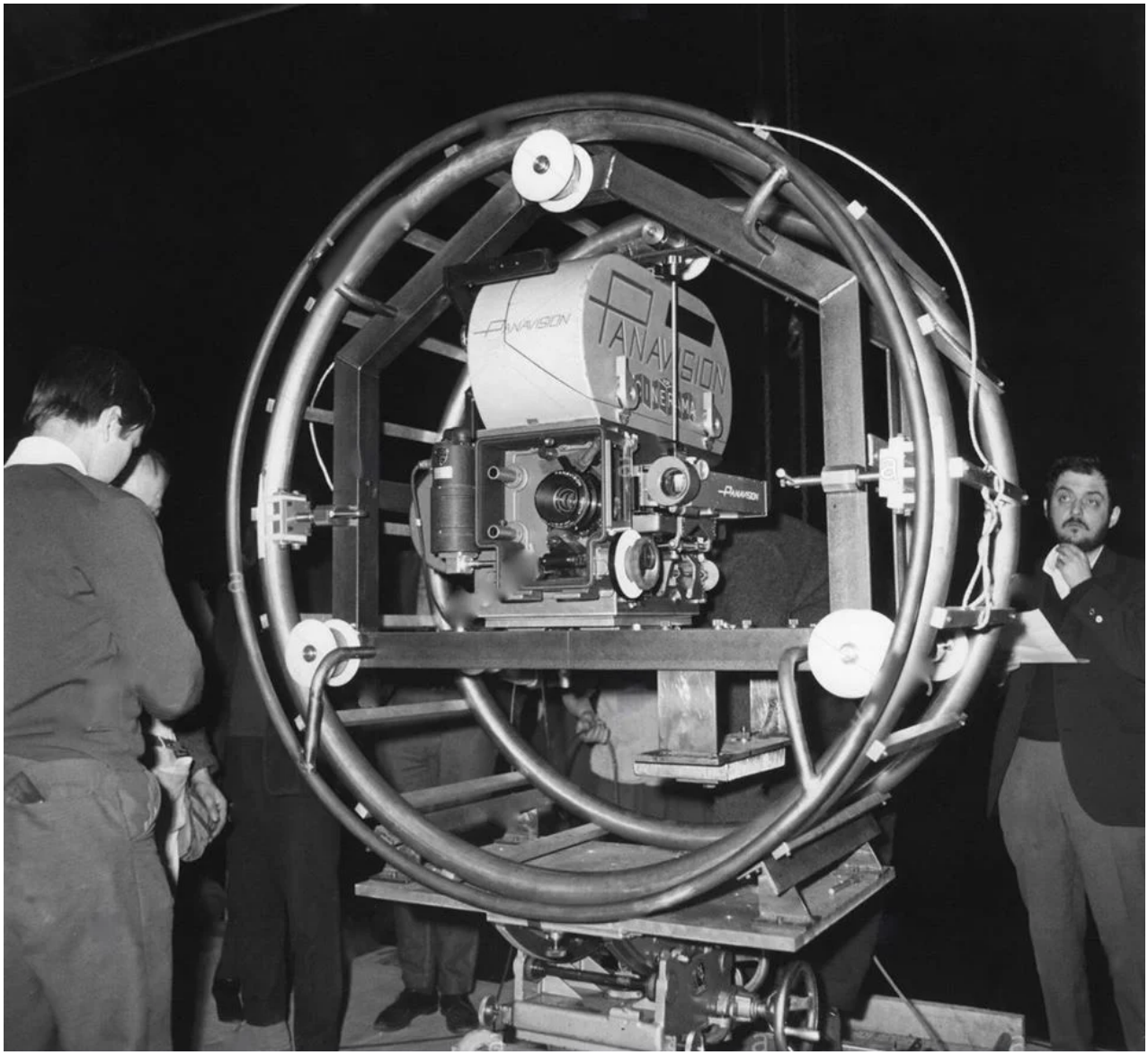

Fig. 7. Stanley Kubrick next to the swing bar.

With the help of several wheels that move along two tubular metal hoops, the camera can make a full turn in any direction, rotate 360˚. The lens of the movie camera is exactly in the center of the metal circle, so when you rotate the internal device, the camera rotates around the axis of the lens.

The device turned out to be large, because the filming of "A Space Odyssey" was made on wide 70mm film, and the camera itself was large. For a 16mm camera, the rotating rig will be significantly lighter and smaller.

Speaking of the filming of A Space Odyssey, we cannot pass by and mention the largest rotating set invented for a movie. It is in height with a 4-storey building - fig. 8.

Fig. 8. Drum centrifuge at the final stage of construction.

It is a giant drum, over 10 meters in diameter and over 3 meters wide. The set - Fig. 9 - was built at MGM Studios.

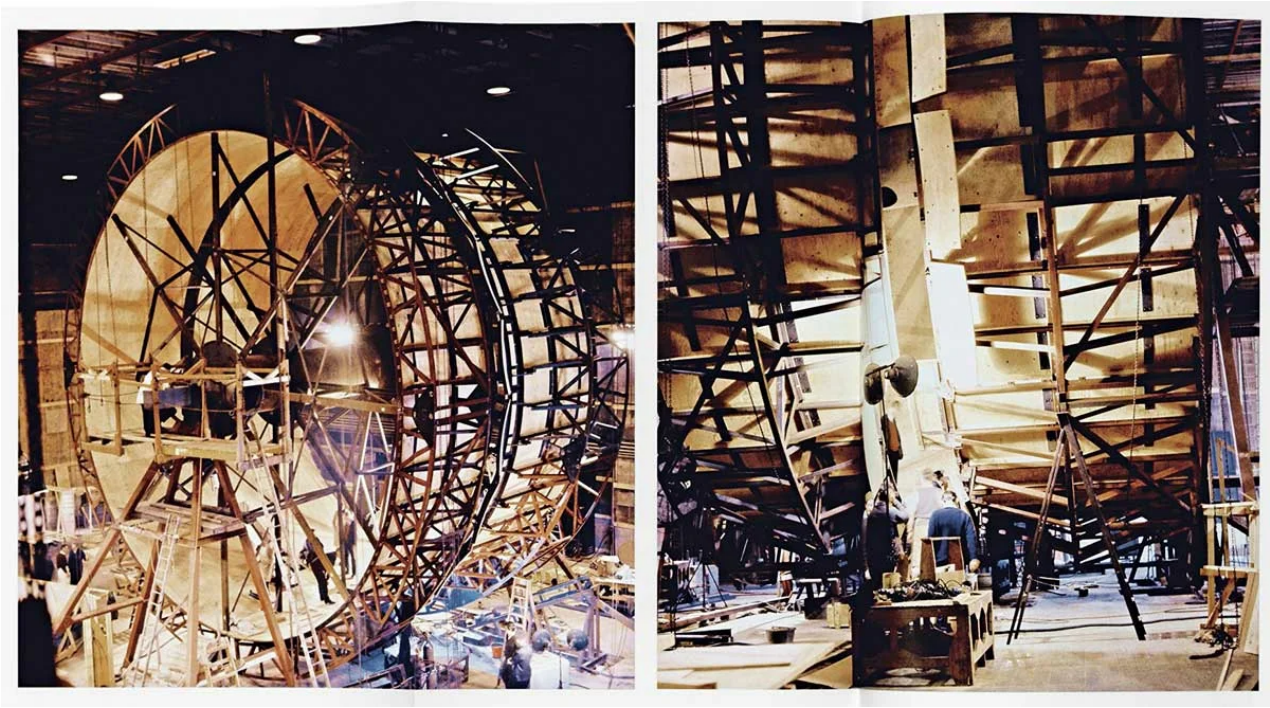

Fig. 9. Decoration of the centrifuge drum in the manufacturing process.

The camera inside could either be fixed in place and move with the centrifuge, or move independently. When the drum rotated, the inner track moved at a speed of 1.2 m / s. All interior elements of the interior were screwed to the floor and walls - fig. 10.

Fig. 10. Decoration inside the drum.

VIDEO: VIDEO FRAGMENT from the movie "A Space Odyssey"

So we have brought you to the answer to the question, how did E. White turn in the frame without any weightlessness? Remember the stewardess who walked in circles? She actually stood in one place, and the decoration spun around her. In the same way, in fact, in one place there was an actor portraying White, and a

set was spinning around him, in the foreground of which was the Gemini booth, and on the far wall of the set was a movie screen with a cloud cover of the Earth.

We have revealed the secret of the flight attendant's movement for you, forcing the scenery, not the actress, to rotate in the video clip. Likewise, we'll now make the background rotate in White's clip so you can see the astronaut actor hanging in one place all the time.

Perhaps you will not be completely satisfied with this video, because in the editor we can rotate the "picture" in only one plane, but in reality the camera was moving in two perpendicular planes. (But we are thinking about it ...)

VIDEO: how White moved in reality.

Probably, the question crept into you: could Stanley Kubrick be involved in the filming of this episode with E. White, 1965? A year and a half earlier, at the end of 1963, he finished his film Doctor Strangelove, or How I Learned to Stop Worrying and Love the Atomic Bomb (premiered in January 1964). In addition, S. Kubrik decided to make a "good notorious film about science fiction" back in 1964. In the spring of 1964, he meets with the writer Arthur Clarke, and the process of work begins. By the start of filming "A Space Odyssey" in December 1965, all the final designs of the spacecraft were ready. And the movie with White's exit into "open space" dates back to the end of 1965.

If we look closely at the film "2001. A Space Odyssey", we will notice there almost a "quote" from "White's exit" - I mean a frame of the film, where the rotating Earth is seen in the background - Fig. 11.

Fig. 11. "Earth" in the background.

Here, a rear projection technique is used - a translucent (translucent, like tracing paper) movie screen is located on the background, and a movie projector shines on it from the other side (behind). A movie projector projects a pre-shot movie with a rotating "Earth" onto the movie screen.

Here's how this fragment looks like in the movie.

Continued, part 5. Turned the astronaut over and was stunned! The answer to Gemini 4.

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Cameraman L. Konovalov was with you. Until next time!